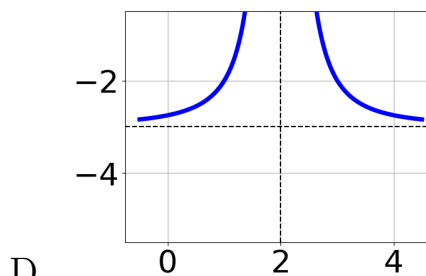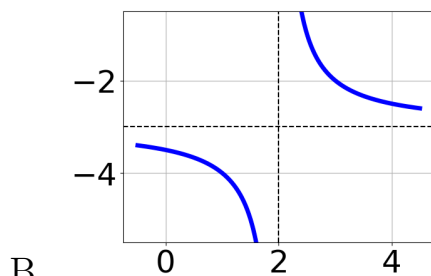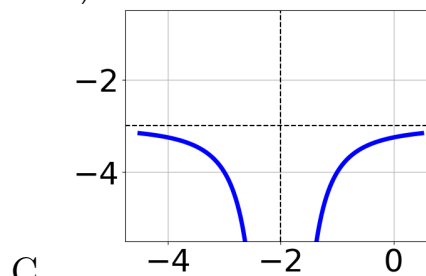1. Choose the graph of the equation below.

$$f(x) = \frac{1}{(x-2)^2} - 3$$

A.

B.

C.

D.

E. None of the above.

---

2. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{8}{5x-5} + 5 = \frac{-2}{40x - 40}$$

A. $x \in [-1.35, -1.3]$

B. $x_1 \in [0.58, 0.63]$ and $x_2 \in [-0.33, 2.67]$

C. $x \in [0.67, 2.67]$

D. All solutions lead to invalid or complex values in the equation.

E. $x_1 \in [-1.35, -1.3]$ and $x_2 \in [-0.33, 2.67]$
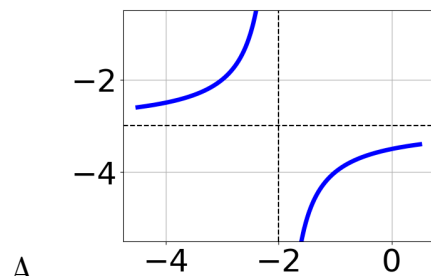
---

3. Choose the graph of the equation below.

$$f(x) = \frac{-1}{(x-2)^2} - 1$$
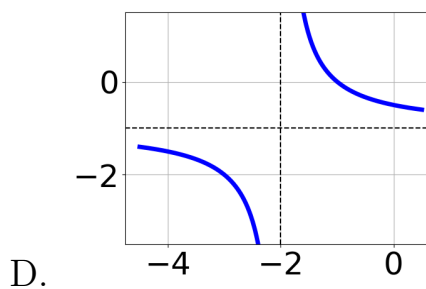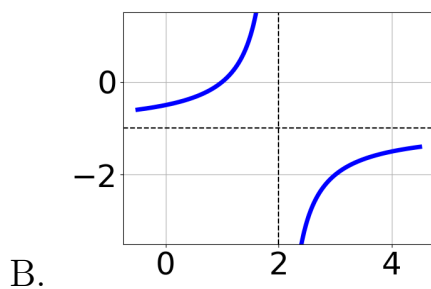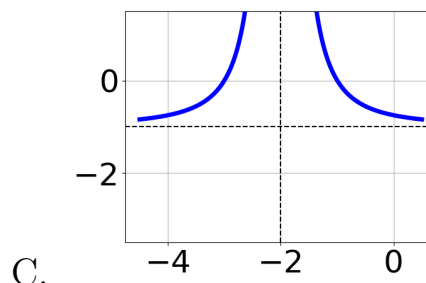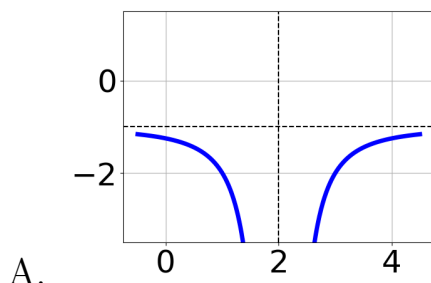
A.

C.

B.

D.

E. None of the above.

---

4. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{50}{20x + 90} + 1 = \frac{50}{20x + 90}$$

A. $x \in [-5.5, -2.5]$

B. $x \in [3.5, 6.5]$

C. All solutions lead to invalid or complex values in the equation.

D. $x_1 \in [-5.5, -3.5]$ and $x_2 \in [-5.5, -2.5]$

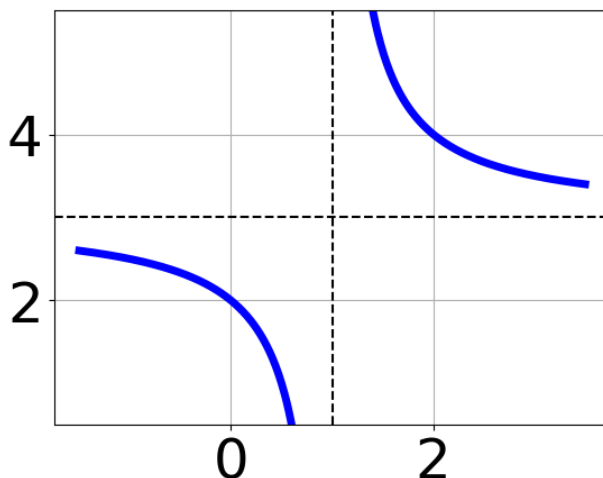E. $x_1 \in [-5.5, -3.5]$ and $x_2 \in [3.5, 6.5]$

---

5. Determine the domain of the function below.

$$f(x) = \frac{3}{20x^2 - 45x + 25}$$

A. All Real numbers except $x = a$, where $a \in [-0.9, 1.2]$

B. All Real numbers.

C. All Real numbers except $x = a$ and $x = b$, where $a \in [-0.9, 1.2]$ and $b \in [1.1, 1.6]$

D. All Real numbers except $x = a$, where $a \in [19.7, 21.6]$

E. All Real numbers except $x = a$ and $x = b$, where $a \in [19.7, 21.6]$ and $b \in [23.9, 26.9]$

---

6. Choose the equation of the function graphed below.

A. $f(x) = \dfrac{1}{x - 1} + 3$

B. $f(x) = \dfrac{1}{(x - 1)^2} + 3$

C. $f(x) = \dfrac{-1}{x + 1} + 3$

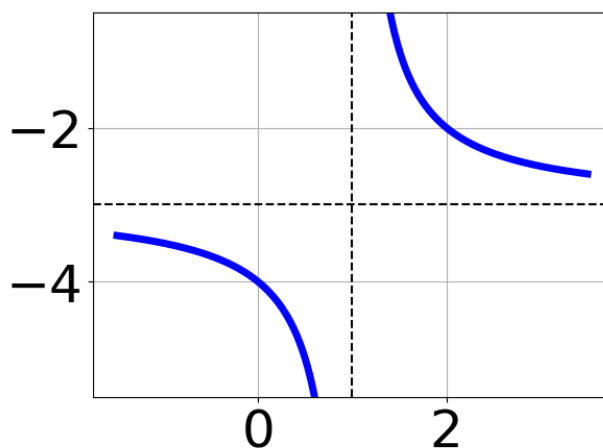D. $f(x) = \dfrac{-1}{(x + 1)^2} + 3$

E. None of the above

---

7. Determine the domain of the function below.

$$f(x) = \frac{5}{30x^2 + 12x - 18}$$

A. All Real numbers.

B. All Real numbers except $x = a$, where $a \in [-38, -35]$

C. All Real numbers except $x = a$ and $x = b$, where $a \in [-38, -35]$ and $b \in [15, 17]$

D. All Real numbers except $x = a$, where $a \in [-3, 0]$

E. All Real numbers except $x = a$ and $x = b$, where $a \in [-3, 0]$ and $b \in [0.6, 1.6]$

---

8. Choose the equation of the function graphed below.

A. $f(x) = \dfrac{1}{(x-1)^2} - 3$

B. $f(x) = \dfrac{-1}{(x+1)^2} - 3$

C. $f(x) = \dfrac{1}{x-1} - 3$

D. $f(x) = \dfrac{-1}{x+1} - 3$

E. None of the above

---

9. Solve the rational equation below. Then, choose the interval(s) that

the solution(s) belongs to.

$$\frac{-5x}{-6x+3} + \frac{-7x^2}{24x^2 - 36x + 12} = \frac{5}{-4x+4}$$

A. $x_1 \in [0.64, 0.78]$ and $x_2 \in [-2.37, 0.11]$

B. $x \in [0.86, 1.04]$

C. $x_1 \in [0.64, 0.78]$ and $x_2 \in [-0.58, 1.58]$

D. All solutions lead to invalid or complex values in the equation.
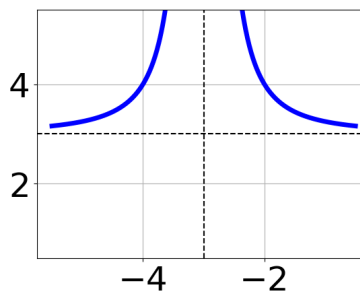
E. $x \in [-1.77, -1.5]$

---

10. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

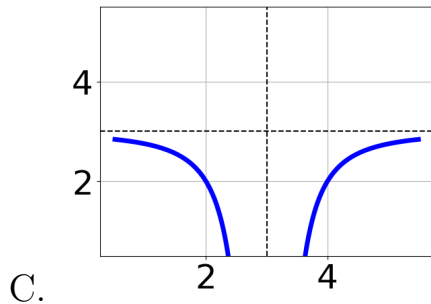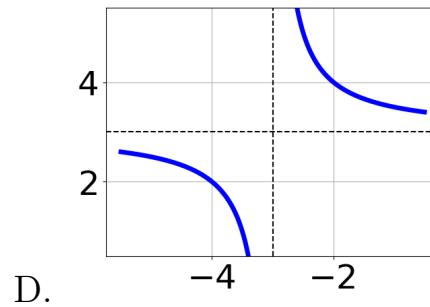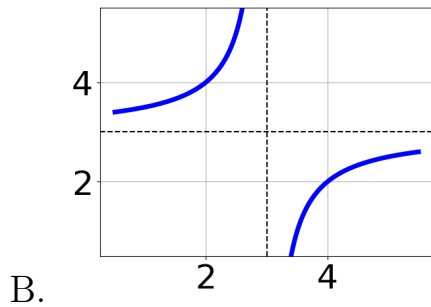$$\frac{5x}{3x-6} + \frac{-2x^2}{-12x^2 + 12x + 24} = \frac{-4}{-4x-4}$$

A. $x_1 \in [1.77, 3.6]$ and $x_2 \in [-1.17, -0.95]$

B. $x \in [-2.56, 0.83]$

C. $x \in [1.77, 3.6]$

D. $x_1 \in [-0.3, 0.93]$ and $x_2 \in [-2.17, -1.08]$

E. All solutions lead to invalid or complex values in the equation.

---

11. Choose the graph of the equation below.

$$f(x) = \frac{-1}{x-3} + 3$$

A.

B.

D.

C.

E. None of the above.

---

12. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{98}{-42x + 70} + 1 = \frac{98}{-42x + 70}$$

A. $x_1 \in [-2.67, 0.33]$ and $x_2 \in [-0.33, 2.67]$

B. $x \in [-2.67, 0.33]$

C. All solutions lead to invalid or complex values in the equation.

D. $x \in [0.67, 2.67]$

E. $x_1 \in [0.67, 2.67]$ and $x_2 \in [-0.33, 2.67]$

---

13. Choose the graph of the equation below.

$$f(x) = \frac{1}{x - 1} - 1$$
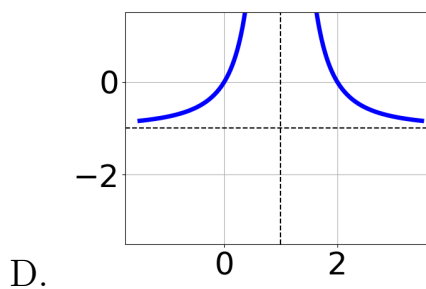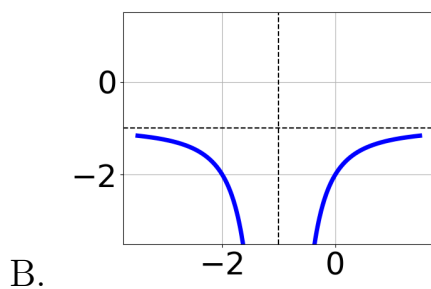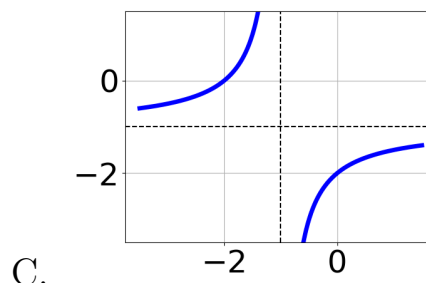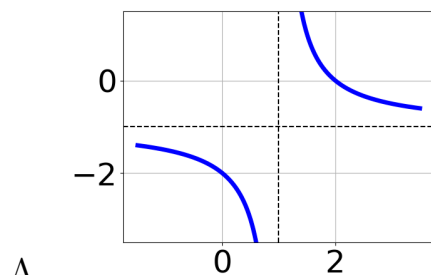
A.

C.

B.

D.

E. None of the above.

---

14. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{3}{-8x + 3} + -4 = \frac{9}{64x - 24}$$

A. All solutions lead to invalid or complex values in the equation.

B. $x \in [0.25, 2.25]$

C. $x \in [-1.3, -0.2]$

D. $x_1 \in [-1.3, -0.2]$ and $x_2 \in [0.16, 0.37]$
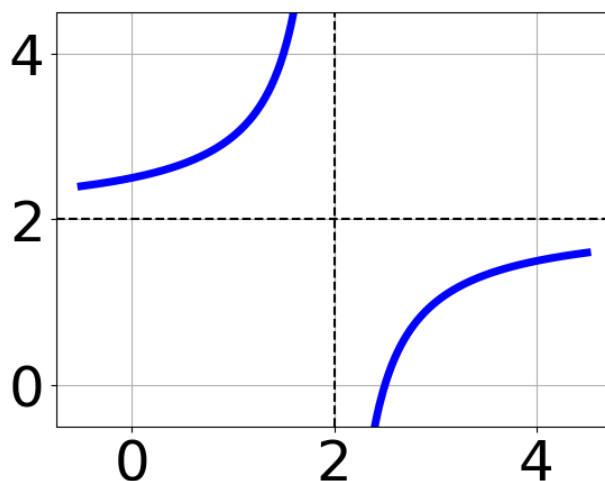
E. $x_1 \in [0, 0.6]$ and $x_2 \in [0.49, 0.57]$

---

15. Determine the domain of the function below.

$$f(x) = \frac{5}{18x^2 - 33x + 15}$$

A. All Real numbers except $x = a$, where $a \in [0.65, 0.85]$

B. All Real numbers except $x = a$ and $x = b$, where $a \in [8.93, 9.23]$ and $b \in [29.76, 30.07]$

C. All Real numbers.

D. All Real numbers except $x = a$, where $a \in [8.93, 9.23]$

E. All Real numbers except $x = a$ and $x = b$, where $a \in [0.65, 0.85]$ and $b \in [0.85, 1.05]$

---

16. Choose the equation of the function graphed below.

A. $f(x) = \dfrac{1}{x - 2} + 0$

B. $f(x) = \dfrac{-1}{x + 2} + 0$

C. $f(x) = \dfrac{1}{(x - 2)^2} + 0$

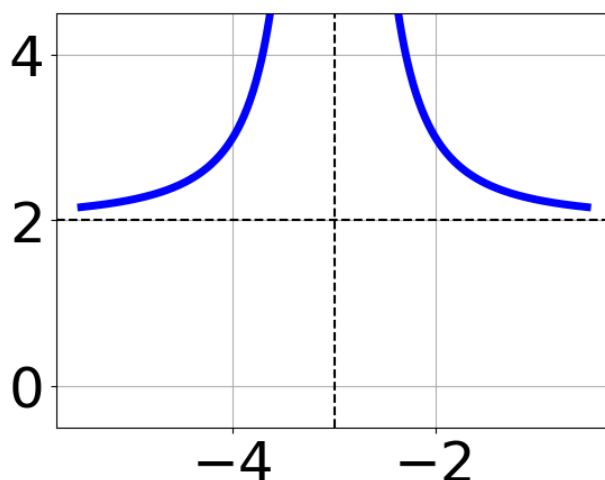D. $f(x) = \dfrac{-1}{(x + 2)^2} + 0$

E. None of the above

---

17. Determine the domain of the function below.

$$f(x) = \frac{6}{9x^2 + 9x - 18}$$

A. All Real numbers.

B. All Real numbers except $x = a$ and $x = b$, where $a \in [-2.2, -1.9]$ and $b \in [0.5, 3.3]$

C. All Real numbers except $x = a$, where $a \in [-2.2, -1.9]$

D. All Real numbers except $x = a$ and $x = b$, where $a \in [-19.1, -16.9]$ and $b \in [8.3, 10.9]$

E. All Real numbers except $x = a$, where $a \in [-19.1, -16.9]$

---

18. Choose the equation of the function graphed below.

A. $f(x) = \dfrac{-1}{x + 3} - 5$

B. $f(x) = \dfrac{-1}{(x + 3)^2} - 5$

C. $f(x) = \dfrac{1}{x - 3} - 5$

D. $f(x) = \dfrac{1}{(x - 3)^2} - 5$

E. None of the above

---

19. Solve the rational equation below. Then, choose the interval(s) that

the solution(s) belongs to.

$$\frac{6x}{-5x-4} + \frac{-7x^2}{-30x^2 - 49x - 20} = \frac{-2}{6x+5}$$

A. $x \in [-1.07, -0.97]$

B. $x_1 \in [0.09, 0.72]$ and $x_2 \in [-1.6, -0.81]$

C. $x_1 \in [0.09, 0.72]$ and $x_2 \in [-0.82, -0.29]$

D. $x \in [-0.88, -0.27]$

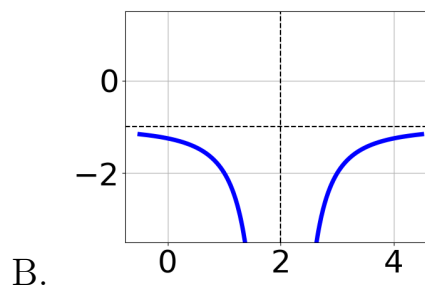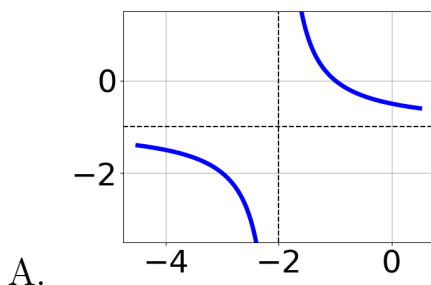E. All solutions lead to invalid or complex values in the equation.

---

20. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.
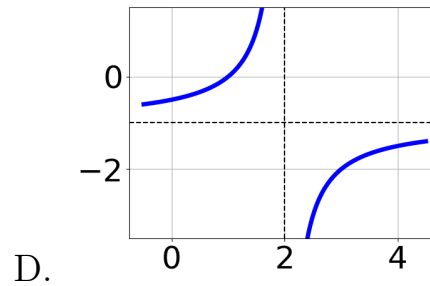
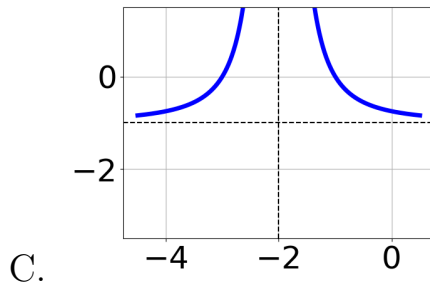$$\frac{2x}{4x+4} + \frac{-6x^2}{-16x^2 - 40x - 24} = \frac{7}{-4x-6}$$

A. $x_1 \in [-1.73, -1.62]$ and $x_2 \in [-1.39, -1.19]$

B. $x \in [-1.37, -1.19]$

C. $x_1 \in [-1.73, -1.62]$ and $x_2 \in [-1.17, -0.52]$

D. All solutions lead to invalid or complex values in the equation.

E. $x \in [-1.58, -1.47]$

---

21. Choose the graph of the equation below.

$$f(x) = \frac{-1}{x-2} - 1$$

A.   B.

C.   D.

E. None of the above.

---

22. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{7}{3x - 8} + 8 = \frac{2}{9x - 24}$$

A. All solutions lead to invalid or complex values in the equation.

B. $x \in [1.4, 4.4]$

C. $x_1 \in [-3.93, 0.07]$ and $x_2 \in [2.4, 2.41]$

D. $x_1 \in [-0.6, 5.4]$ and $x_2 \in [2.41, 2.54]$

E. $x \in [-3.93, 0.07]$

---

23. Choose the graph of the equation below.

$$f(x) = \frac{-1}{(x - 1)^2} + 2$$

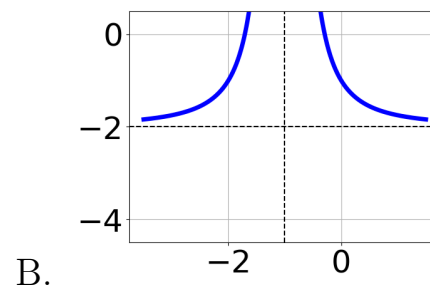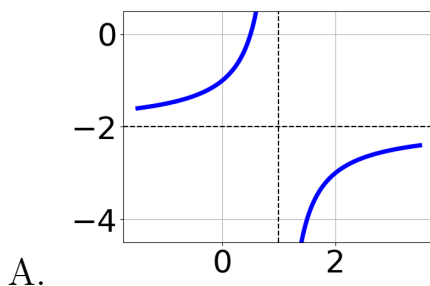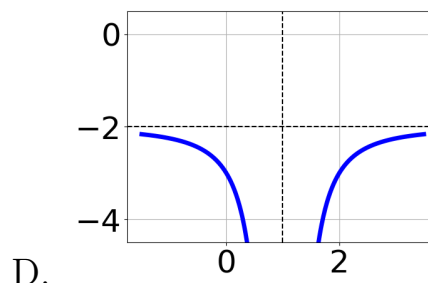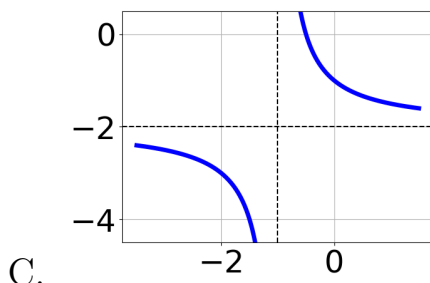A.   B.

C.

D.

E. None of the above.

---

24. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{-8}{6x - 3} + -5 = \frac{-7}{-36x + 18}$$

A. $x \in [-1.2, -0.4]$

B. $x_1 \in [-0.7, 1.1]$ and $x_2 \in [0.3, 0.7]$

C. $x \in [0.19, 4.19]$

D. All solutions lead to invalid or complex values in the equation.

E. $x_1 \in [-1.2, -0.4]$ and $x_2 \in [-0.7, 0.3]$

---

25. Determine the domain of the function below.

$$f(x) = \frac{5}{24x^2 + 6x - 9}$$

A. All Real numbers.

B. All Real numbers except $x = a$ and $x = b$, where $a \in [-13, -10]$ and $b \in [17, 21]$

C. All Real numbers except $x = a$, where $a \in [-0.75, 0.25]$

D. All Real numbers except $x = a$ and $x = b$, where $a \in [-0.75, 0.25]$ and $b \in [0.5, 3.5]$

E. All Real numbers except $x = a$, where $a \in [-13, -10]$

26. Choose the equation of the function graphed below.
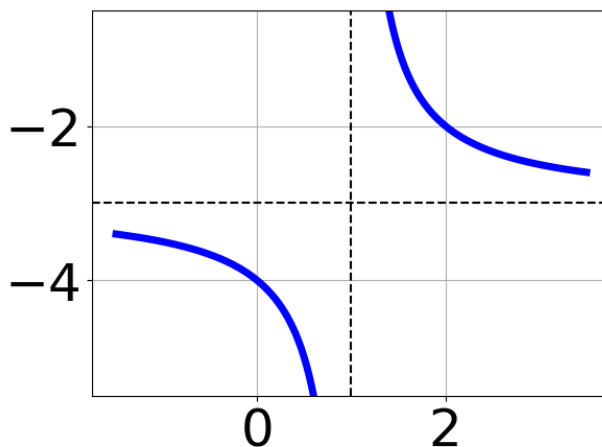
A. $f(x) = \dfrac{1}{x-1} - 4$

B. $f(x) = \dfrac{1}{(x-1)^2} - 4$

C. $f(x) = \dfrac{-1}{x+1} - 4$

D. $f(x) = \dfrac{-1}{(x+1)^2} - 4$

E. None of the above

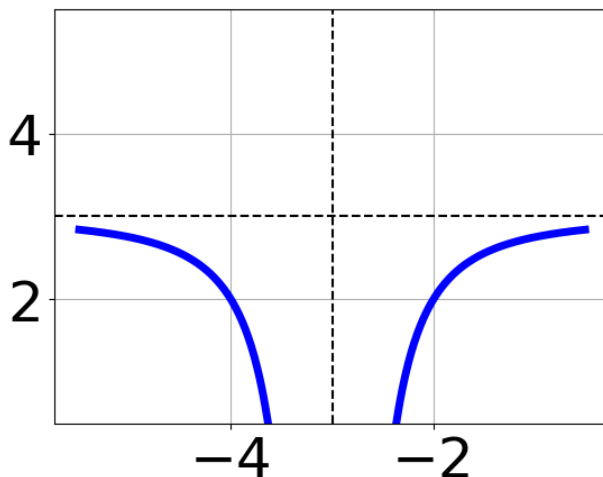27. Determine the domain of the function below.

$$f(x) = \frac{3}{20x^2 + x - 30}$$

A. All Real numbers except $x = a$ and $x = b$, where $a \in [-21, -18]$ and $b \in [28, 34]$

B. All Real numbers except $x = a$, where $a \in [-2.25, 0.75]$

C. All Real numbers except $x = a$, where $a \in [-21, -18]$

D. All Real numbers except $x = a$ and $x = b$, where $a \in [-2.25, 0.75]$ and $b \in [-0.8, 3.2]$

    E. All Real numbers.

---

28. Choose the equation of the function graphed below.

    A. $f(x) = \dfrac{1}{x-3} + 3$

    B. $f(x) = \dfrac{-1}{(x+3)^2} + 3$

    C. $f(x) = \dfrac{1}{(x-3)^2} + 3$

    D. $f(x) = \dfrac{-1}{x+3} + 3$

    E. None of the above

---

29. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{3x}{-5x+5} + \frac{-2x^2}{-35x^2 + 10x + 25} = \frac{-2}{7x+5}$$

    A. $x_1 \in [-0.76, -0.74]$ and $x_2 \in [-0.29, 1.06]$

    B. $x \in [-0.74, -0.67]$

    C. $x \in [0.96, 1]$

D. All solutions lead to invalid or complex values in the equation.

E. $x_1 \in [0.96, 1]$ and $x_2 \in [-1.5, -0.63]$

30. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{6x}{-6x - 2} + \frac{-5x^2}{-18x^2 + 6x + 4} = \frac{4}{3x - 2}$$

A. $x \in [-0.69, -0.24]$

B. $x_1 \in [-1.03, -0.38]$ and $x_2 \in [0.01, 0.36]$

C. $x_1 \in [-0.69, -0.24]$ and $x_2 \in [0.59, 0.96]$

D. $x \in [0.6, 1.75]$

E. All solutions lead to invalid or complex values in the equation.